

7827

RECORD  
COPY

MAIN FILE

PR

APRS: 4284

22 December 1960

SURVEY OF SOVIET HEAVY INDUSTRY (3)

DTIC QUALITY INSPECTED

MAIN FILE

DISTRIBUTION STATEMENT A

Approved for public release  
Distribution Unlimited

19980109 134

Distributed by:

OFFICE OF TECHNICAL SERVICES  
U. S. DEPARTMENT OF COMMERCE  
WASHINGTON 25, D. C.

U. S. JOINT PUBLICATIONS RESEARCH SERVICE  
1636 CONNECTICUT AVE., N. W.  
WASHINGTON 25, D. C.

JPRS: 4284

CSO: 1300-S/3

### SURVEY OF SOVIET HEAVY INDUSTRY (3)

This is a series report, published approximately biweekly, which contains items of interest on Soviet heavy industry as reflected in articles, short news items, announcements, etc., appearing in various USSR publications. The items contained in this report fall under the broad categories listed below in the table of contents.

#### TABLE OF CONTENTS

#### Page

New Vehicles

1

Criticism of Production

5

Machine Tools

6

Other Machinery

14

## NEW VEHICLES

### Flying Platform

It is known that the Soviet Union is developing a "flying platform", which is probably based on the air cushion principle. It is supposed to be able to handle loads up to 40 tons. (Deutsche Flugtechnik, Berlin, Vol IV, no 8, August 1960, page 248. Full translation).

### New Amphibian For Timber Floating

Whoever has observed timber floating on the rivers has probably noticed the large number of people working on the difficult task of "tearing" the logs from the great piles into the water. But throwing the timber into the river is not the entire job. Before they have time to sink, the logs must be floated to the mechanized receiving dock where the logs are either transferred to the railroad or formed into large rafts.

We call the receiving docks mechanized not without reason. The work on these docks is more mechanized than perhaps any other phase of log floating. Here are sorting machines and all types of cranes and transporters, and finally rafting machines, which speed the work on the docks many-fold and make it much easier. But almost all other operations on the float are still done by hand.

The collective of the Leningrad Timber and Log-floating Scientific Research Institute has started testing the PVA patrol amphibian. It was designed by Candidate YA. P. Petrov, Chief Designer G. E. Grechko and other colleagues of the institute. Of welded steel construction,

New Amphibian (cont'd)

the body of the amphibian is sufficiently solid to "travel" any wilderness area on caterpillar treads. The main 150 hp diesel engine freely "stands" the weight of the winches, bulldozer attachment, and other hinged apparatus mounted on the amphibian. All these mechanisms are necessary for cleaning the river bed and driving piles in marshy ground, inaccessible to other forms of transport.

The amphibian moves freely along the beds of shallow rivers and, if necessary, can switch from caterpillar drive to water drive and navigate like a boat. It can easily negotiate a river bank of 35 degrees and can turn on a dime while afloat. Such maneuverability and navigating potential make the PVA indispensable for log floating work. The amphibian's powerful seven-ton winches replace hundreds of workers engaged in floating timber across lakes, clearing the shores of scattered logs, and analyzing the obstacles on river shallows. The "crew" of the amphibian (only two persons; driver-mechanic and sailor) is aided by a small brigade of timber-floaters.

New Amphibian (cont'd)

After factory tests, the first amphibian will be sent for autumn work to one of the timber-floating offices in Karelia. (Leningradskaya Pravda, 5 August 1960. Full translation).

### MAZ-525 Dump Truck Production

Every day on the broad ribbon of the Moscow highway, 50 kilometres from the Byelorussian capital, new 25-ton MAZ-525 dump trucks are being tested. The country's first of such large capacity trucks appeared about ten years ago. Working on the largest hydroelectric projects and mining operations, they won a good reputation. The Minsk Automobile Plant produced the MAZ-525 at that time.

A year and a half ago, production of the MAZ-525 was transferred to the Byelorussian Automobile Plant, a new enterprise located in the suburb of Zhodino, near Minsk. This year they are producing three times as many dump trucks as the Minsk Automobile Plant produced. Together with the increase in production, the collective of the young enterprise is raising the technological level and quality of the trucks. Many changes have been made in the design and construction of the truck recently. In particular, the production quality of cardan shafts and gear boxes has been improved, and the steering-amplifier design has been changed. Much attention has been devoted

### MAZ-525 Production (cont'd)

to improving equipment in the car and perfecting the dumping mechanism. Heating the bottom of the dump surface by exhaust gases is an interesting innovation.

The collective of Byelorussian automobile constructors constantly studies their machines' performance at construction projects and mining operations. A conference on the quality of the MAZ-525 took place in Minsk not long ago. Representatives of the country's largest truck components took part in the conference. They made many valuable suggestions, the realization of which will improve the use potential and technological level of the powerful dump truck. (Trud, Moscow, 5 August 1960. Full translation).

### New Motorbikes

The collective of the Shyaulyaysk Bicycle Plant has brought out an experimental series of motorbikes. They were produced in collaboration with the Riga Bicycle Plant. The bikes have successfully passed their first tests on roads with various surfaces and showed good practical qualities. But the machine will have its first basic examination in the Serpukhov Central Design operational Bureau. After static testing, the models will travel MORE THAN seven thousand kilometres along various roads in the Soviet Union. The bike factory brigade -- locksmith-assemblers V. Ramonis, S. Kachinskas, locksmith-tester V. Cheputis, headed by Design Engineer I. Grigalyus-- is now in Serpukhov, where it will be defending the honor of our factory's brand. (Sovetskaya Litva, 5 August 1960. Full translation).

### New Giant Truck

Today the collective of the Byelorussian Automobile Plant has a great victory. The new giant 40-ton truck emerged from the gates of the experimental shop. This truck is equipped with a more modern hydra-mechanical transmission than dump trucks of an earlier 25-ton model. Gears are shifted electropneumatically. The giant truck is equipped with new hydraulic lift pumps, and the friction clutches are redesigned. These and other improvements have considerably improved the operational qualities of the monster dump truck. Soon this giant will appear on the construction jobs of our native land. (Sel'skaya Zhizn', Moscow, 15 October 1960. Full translation).

## CRITICISM OF PRODUCTION

### Impeders of Progress

We also have clods who are impeding technological progress with their indifference and sluggishness. Because of this we were forced to discharge the director of the automatic machine tool plant, Comrade Bel'dyugin, and the director of the indexing head plant, Comrade Mayorov. In the future we shall continue to struggle decisively against all manifestations of sluggishness and routineness. (Pravda, 23 June 1960. Partial translation).

---

### Production Delay

Competing in honor of the coming Plenum of the Central Committee of the CPSU, the collectives of the Stalinsk Aluminum Plant and the "Stalinskpromstroy" Trust have assumed the obligation to produce and kiln electrolyzers by 1 July. But this obligation may not be fulfilled, since the Moscow Special Machine Tool and Automatic Line Plant has not furnished us with two special shaft cranes. They were to be delivered in the first quarter of this year. It is feared that we will not even receive them in June. (Vechernyaya Moskva, 10 June 1960. Full translation).

## MACHINE TOOLS

### New Production Lines

We should divide our story of the achievements of the Machine Tool Plant imeni S. M. Kirov collective into two parts. First of all, there are the new elements of automation introduced into the machine tools put out by the plant in the past year. Secondly, we shall talk about the mechanization of the very process of producing these machine tools. On the Model 163 lathes, several processes are mechanized and, therefore, are 25% more productive than the former Model 1D63A lathes. In the past year the production and variety of special machine tools has been increased. Now 65% of all special machine tools produced at the plant are automated or semi-automated.

The pride of the Tbilisi machine tool builders are 26 drum type automatic machine tools for machining pipes. These are the first of this type of machine built in the Soviet Union. The machining of pipes will be several

### New Production Lines (cont'd)

times faster than usual. Most of these automatic tools have already been put into production at the Chelyabinsk Pipe Rolling Mill. Now, dear reader imagine that you are wandering among the shops where these machine tools are produced. Even more amazing changes have taken place here lately. The group position of equipment has been replaced by an assembly line in the mass production lathe area. Formerly machine tools were arranged in groups, planing machines, milling and drilling machines, as well as lathes. Now they are set up in order of operation. An unfinished gear, for instance, going from one machine tool to another, comes to the inspector's table at the end of the line. 14 such mechanized assembly lines have been in operation until lately. In preparation for the Plenum of the Central Committee of the CPSU, the workers of the plant's basic mechanical shop no 1 have put two more assembly lines into operation. Now the parts machining cycle has been shortened even more.

Production lines can be of various types: short and long, well and poorly equipped. 74 special automated



New Production Lines (cont'd)

high productivity machine tools are the reason for the high technological level and comparatively small area occupied by our production lines. One such machine tool often replaces several ordinary ones. For example, 33 holes are drilled at once on one of the aggregate tools.

But this is not enough. The equipment must be well equipped with high-speed components and instruments for high-speed work. There are already 1,100 models of such instruments and 1,700 models of various cutting and measuring instruments used on the production of lathes alone by the opening of the Plenum of the Central Committee of the CPSU.

The fruits of incorporating new technology, mechanization, and automation into industry are immediately evident. The following figures speak of this: In one year the labor of producing each lathe has been reduced from 1,303 to 1,046 hours. The cost of lathe production has correspondingly decreased since the beginning of the

---

New Production Lines (cont'd)

Seven-year Plan by 1,500 rubles. The following figure fills one's heart with joy: savings by plant innovators during the first six months of man-hours are enough to produce 15 new lathes. (Zarya Vostoka, Tbilisis, 13 July 1960. Partial translation).

### Improvements in Machine Tool Construction

The collective of the "Zhal'giris" Plant overfulfills its production plan every month and determinedly continues to raise labor productivity. The machine tool builders pledged to fulfill the Seven-year Plan in new machine tool development in 1961. They say that two heads are better than one. This is why each of us studies the latest experiments in related enterprises with great interest. This year, for example, more than 30 engineers and workers took business trips to the milling machine plants in Dmitrov, "Krasnyy Proletariy" in Moscow and other plants in our country.

Having visited the Moscow "Stankolit" plant and the Leningrad Plant imeni Il'ich, OTK Master, Comrade Galdovskiy, brought forth several valuable ideas on improving casting technology. Together with the shop workers, he organized a section for welding and sealing casting defects with epoxide resins. This will considerably lower the percentage of defective production. The plant's chief

### Improvements in Construction (cont'd)

metallurgist, Comrade Zinov'yev, studied the latest experiments of the casting section workers of the scientific, technical society, "Mashprom". Returning from Moscow, he led the introduction of suberosed casting. Now the casting of several parts for milling machines is conducted by the new method. Thanks to this, the labor expended in casting has been reduced and up to 12 kilograms of cast iron are saved on each machine produced.

In the foundry, the production of new parts is being changed over from hand to machine production. This will save on materials and will raise labor productivity considerably. Also on the initiative of Comrade Zinov'yev, new Type 305 pivotal sand-blasters will be used for this purpose. Labor productivity will increase even more through this. A firm friendship binds the Lithuanian and Byelorussian machine tool builders. Not long ago a group of our innovators visited the enterprises of Minsk. They acquainted themselves with the work of the Plant imeni Kirov's scientific-technical society, the automatic line

Improvements in Construction (cont'd)

plant and automobile plant, and obtained many new improvements from the Byelorussians. On the Minsk example, new scientific-technical society sections began to operate in our plant: casting, designing, dissemination of latest experiments and scientific-technical knowledge. The question of studying the latest experiments of allied enterprises is a subject of constant attention on the part of the administration and party organization of our enterprise.

We receive guests more and more often from other enterprises. The Byelorussian and Latvian emissaries are interested by problems of technological improvements, the application of new technology, and the making of parts out of kapron, which has been done at "Zhal'giris". Each of us is always glad to share his experience with friends from other republics, for the creative comradeship of the machine tool builders is an important condition for the early fulfillment of the Seven-year Plan. (Sovetskaya Litva, 1 July 1960. Full translation).

Drill Production Success

At the Vil'nyus Drill Plant, the Brigade of Communist Labor of the First Milling Machine Shop, headed by Comrade Vitenas, became famous for its high production results. This collective completed its seven-month task by the 26th of June. Estimating its potential, the brigade's workers pledged to over-produce more than 350,000 rubles worth of drills by 21 July. (Sovetskaya Litva, 8 July 1960. Full translation).

### New Presses and Machine Tools

Our plant collective learned of the coming July Plenum of the Central Committee of the CPSU on the day of the meeting of the party-economic active, when the work totals were added up for the first quarter. A decision to stand on honor shift was taken with great exuberance at this meeting. Increased socialist obligations were worked out and accepted. The most important of them were connected with technological improvements. Twelve new machine tool and press models were to be assimilated, among which were such complex machines as the 350 ton double action P-233 press, the 700 ton P-236, and presses for the pipe industry, the ten position PO18A, the two position PO10, PO19, etc. The collective has successfully handled these obligations. In addition, the youth of the enterprise have accepted the task of assimilating one more new machine.

Besides new models of presses and machine tools, the enterprise is producing, as a gift to the workers of agriculture, potato harvesting machines of two types:

### New Presses and Machine Tools (cont'd)

Comrade Vekhov's design (with revolving pipe) and Comrade Chernov's design. These machines are of a hinged type and are simple in construction. They will aid in the mechanization of one of the most laborious branches of agriculture.

The Kolomna plant is producing various unique machine tools and presses. More than half of the models are being produced for the first time in the Soviet Union. Because of this, the problems of technological progress to be decided by the coming Plenum of the Central Committee of the CPSU are particularly close to us. Which, in our opinion, problems must be solved for the future perfecting of machines produced in our country and, in particular, in our plant?

We feel the backwardness of the electrical industry especially sharply. The machine tools and presses produced by the Kolomna plant are designed with a high degree of automation with complex hydraulic and electrical systems. They require a correspondingly large quantity

New Presses and Machine Tools (cont'd)

of equipment. Its quality does not satisfy us in the least. This is strikingly apparent in light of the following facts. Machine tools and presses with the Kolomna plant brand have a good reputation. Consumers comment on the high capabilities and productivity, reliability and high quality of the electrical assembly work on the machines. At the same time we receive criticisms on the shortcomings of our equipment: equipment put into the transformer boxes was, to a considerable degree, obsolete. It is too massive and has a lessened potential. The electric motors are also too large.

Our industry continues to produce obsolete types of knife-switches and fuses which do not grace the products of the plant. Although the electrotechnical enterprises have already assimilated a more advanced fuse of the "PTsU" type, "A31-14" automatic fuses and others, they are being produced in insufficient quantities.

We therefore think that in the coming two years particular attention should be devoted to the reconstruc-

New Presses and Machine Tools (cont'd)

tion of plants producing electrical and hydraulic equipment and to the construction of a sufficient number of new plants, for the assimilation of new, perfected types of electrical and hydraulic equipment. Of course, some ordinary plants often produce marvelous instruments and equipment for their needs. This equipment, in design and construction, could easily be used in other plants. They are, however, not available for most factories.

This is why it is necessary to introduce in our country a system by which plant design bureaus can become acquainted with all types of produced and assimilated equipment and instrumentation through the chamber of commerce or some other special organization. It would also be possible here to place orders for their assimilation or broader application. Such a system would considerably speed up the process of perfecting (especially an increase in reliability and useful life) machine tools, presses, and other machines. Often, due to a lack of information, 20 or 30 year old obsolete electrical equip-

New Presses and Machine Tools (cont'd)

ment is mounted on new, improved machines which are our country's pride and joy, while better equipment is being produced at other plants.

All branches of national economy in our country feel the great lack of machine tool and press equipment. Orders for equipment from the Kolomna plant are many times greater than our production potential each year. Realizing this, the RSFSR and USSR State Planning Commissions have worked out proposals for the reconstruction of existing machine tool construction plants and the further development of the machine tool and press industries. Our plant collective supports these proposals. They must be considered and accepted as soon as possible. A sharp increase in capital investment for the development of this extremely important branch of national economy should be included in the plan for 1961.

We think that our plant should receive 50-60,000 square metres additional space for production in coming years, which would make possible an increase in production of approximately 100%. These are the basic problems which

New Presses and Machine Tools (cont'd)

trouble our collective and which we would like to express on the eve of the July Plenum of the Central Committee of the CPSU. Their solution will aid our collective in creating a technological level worthy of our age. (Leninskoye Znamya, 12 July 1960. Full translation).

### Automatic Lines

We have no small amount of experience in the field of mechanization and automation of production. Working together with the scientists, the workers and engineers of the plant have resolved a series of difficult organizational-technical problems and have succeeded in mechanizing many laborious processes. Here are some examples. Until recently the assembly of cardan bearings at specialized plants was done by hand. This is a difficult and not very highly productive task. Dozens of workers, engineers, and technicians took part in creative competition. Five automatic models were designed and built. The best of the bunch was the design of Engineer V. Pogodayev and locksmith L. Gerasimovich. It has been put into production work. This has increased productivity five times and sharply improved labor conditions.

With our own hands we have built four automatic lines -- two in the external bearing ring turning section, and two more in the ring groove grinding section. We ourselves have completed the planning work and completely

### Automatic Lines (cont'd)

built all mechanisms, including autooperators. Incorporation of the lines has saved the plant about 400,000 rubles.

Discussing the decisions of the July Plenum of the Central Committee of the CPSU, the plant collective assumed new, increased obligations. It was decided to fulfill the plan for the second year of the Seven-year Plan ahead of time, by 25 December, and to produce several million rubles worth of commodities above plan. We pledged to reach the labor productivity level planned for the end of the Seven-year Plan by the end of 1963. Production costs will, at the same time, decrease by 25%. A complex plan has been worked out for the modernization of existing equipment. We have reason to believe that this plan will be fulfilled by 1962.

The workers and specialists of the plant have assumed the task of automating our enterprise in the near future. The first steps have already been taken. Plant specialists are working out a plan for automating a shop which will

Automatic Lines (cont'd)

produce several million complex rings a year. (Ekonomicheskaya Gazeta, 5 August 1900. Full translation).

---

OTHER MACHINERY

New Machinery

Oil stoves, bed-steads, and other consumer goods -- this was the entire simple assortment of commodities produced by the metal-working enterprises of Leninakan until a short time ago. After the introduction of Soviet power in the republic, Leninakan became a textile center and a center of light industry. The contours of the new direction began to form only a few years ago. The Seven-year Plan is changing in a basic way the industrial profile of the city. In the last two or three years, new enterprises of the electro-technical, instrument, machine tool and machine construction industries have been created. Now the city's workers are taking an active part in the technological rearmament of industry in the country and are sending their products to all corners of the Soviet Union.

The presses which are produced by the forge-press equipment plant have gained a good reputation. Production on a new type of press started in the second quarter



New Machinery (cont'd)

of this year. This perfected machine is equipped with an electrical system which permits it to be operated in three different ways -- automatic, individual hand operation, and individual operation with the aid of an electric pedal. As opposed to the old model of the same capacity, the new one has a pneumatic starter instead of a mechanical one, and pneumatic brake for speed regulation. Thanks to the electric blocking system, the operator is in complete safety.

The plant's innovators are working on further improvements for the press. Practical steps are being taken to decrease its weight and to ease assembling. The enterprise collective, with no let-down in production, is setting up construction on a new 6.3 ton press. The total number of presses produced now can be counted in the hundreds and thousands.

A modern machine construction plant cannot get along without grinding tools. The Leninakan Grinding Tool Plant joined the ranks of the operating enterprises at the beginning of last year. By the end of last year,

---

New Machinery (cont'd)

several machine tools had already been produced experimentally. The Leninakan circular grinding tool was created by the Design Bureau of the Leningrad Machine Tool Plant imeni Il'ich. They helped get it into production. The machine tool has great precision. With its help it is possible to do internal and external grinding of various parts, as well as on steep cones.

The plant is equipped according to modern technology. Soon another building will go into use here, in which will be located the mechanical and galvanic shops, the thermal processing shop, laboratories and the design bureau. All parts, including the bed plates, which they used to get from other plants, are now cast by the plant collective. A centrolith is being built at the plant. In a few years it will supply the needs not only of the plant itself, but of all the industrial enterprises in the city.

The plan calls for production of a new model of this machine tool starting in the fourth quarter of this year. It will be distinguished by considerably greater

New Machinery (cont'd)

accuracy and ease of operation. The Leninakan designers are now in Leningrad where they are becoming acquainted with the tool and learning the process of producing it. Soon the Leninakan plant will be one of the greatest producers of grinding tools in the country. Right now its machine tools are being sent to Moscow, Kiev, Khar'kov, and other cities to complete the equipping of machine construction plants. (Kommunist, 13 July 1960. Partial translation).

---

New Hay Drying Machine

Four high-speed planetary reduction gears were produced at the Vil'nyus Grinding Toll Plant. What is the explanation for this activity, which is so unusual for this enterprise? In 1958 the republic's Ministry of Agriculture received a French hay drying and chopping machine. In the hay which is treated by the machine, about 80% of the vitamins are retained, while in hay which dries on the fields, only 20-30% of the vitamins are retained. Then it was suggested to construct a similar but improved machine in Lithuania. The Lithuanian Institute of Agricultural Mechanization and Electrification began designing the new machine, and the construction of the first test model was given to several enterprises of the Economic Council; the Kleyped Shipyard, the Vil'nyus Grinding Machine Plant and others. The collective of the Vil'nyus enterprise, competing for a worthy welcome of the Twentieth Anniversary of Soviet Lithuania, successfully fulfilled this special task. (Sovetskaya Litva, 8 July 1960. Full translation).

New Mining Machinery

New machinery for the mining industry has been built at the Aleksandrovskiy Machine Construction Plant in Perm' Oblast'. They include electric ore carriers, automatic belt conveyor mechanisms, improved pumps, and ore-loading machines. (Ekonomicheskaya Gazeta, 5 August 1960. Full translation).

Agricultural Machinery

The collective of the Lidskiy Agricultural Machinery Plant has started production on the universal BU-55 bulldozer. This hinged unit will be used for laying out draining systems, ditch filling, and preparing turf for fertilizer. The new machine is considerably lighter than the earlier model. This year the plant collective will send the first thousand of these bulldozers for agricultural needs. (Ekonomicheskaya Gazeta, 5 August 1960. Full translation).

### Cement Plant Equipment

The "Sibtyazhmash" Plant is producing powerful equipment for cement plants being constructed and reconstructed. Since the beginning of the Seven-year Plan, production on 170 metre rotating furnaces and large schorl mills has begun. The collective is now running the honor shift in recognition of the July Plenum of the Central Committee of the CPSU. The workers are struggling to attain better use of the mechanisms and more rapid fulfillment of orders for new construction projects of the Seven-year Plan. (Kazakhstanskaya Pravda, 2 July 1960, Full translation).

### New Decorative-Construction Equipment

The Odessa Decorative-construction Machine Plant started mass production of mosaic polishing machines. Production will also start here on mixers with folding blades. Testing of a new plaster mixing unit has been concluded. (Stroitel'naya Gazeta, 19 October 1960. Full translation).

### New Machinery

At the Ural Machine Plant a new and powerful caterpillar crane has been designed and built. The capacity of the crane, mounted on an EKG-4 excavator, is 75 tons. Its boom is 40 metres in length. The new crane is to be used in mechanization of assembly work in large industrial construction operations.

The collective of the Zhdanov "Tyazhmash" Plant designed a new powerful excavator for working rocky soil. The capacity of the scoop is 5.5 cubic metres. The productivity of the new machine while working on heavy soil formations is about 4,000 cubic metres per shift.

The Chebarkul' Casting-mechanical Plant (Chel-yabinsk Oblast') started production on 20-ton caterpillar diesel-electric cranes with a 32 metre boom. The new cranes are 15% lighter than those of the same load capacity formerly produced by other plants. The first Chebarkul' cranes have been dispatched to the construction projects of the Urals, Siberia, and Kazakhstan.

### New Machinery (cont'd)

Irrigation canals are usually faced with concrete to prevent filtration (water runoff). Is it possible to do without concrete facing? Yes, it is. Research by workers in the Azerbaydzhan Institute of Hydrotechnology and Melioration has shown that irrigation canals with an anti-filtration covering (screen) of packed soil. A special machine is being designed now in the institute for building such canals.

The new machine will pack the soil by means of metal stamps, creating a solid and waterproof soil jacket up to five feet thick. The working parts of a machine for "stamping out" the canals have already been constructed. The cost of packing the soil and "stamping out" the irrigation canals is 25 times cheaper than building canals with concrete facing. During tests at the proving grounds, the new machines worked with a productivity of 500 to 1,500 square metres of canal per shift.

The workers of the Moscow Institute of Water Engineers imeni V. R. Williams suggested a second variant for replacing concrete facings of irrigation canals --

New Machinery (cont'd)

a polyethylene film. This suggestion successfully passed field tests not long ago at the Kolkhoz imeni Lenin, Khodzhenskiy Rayon, Tadzhik SSR. (Stroitel'naya Gazeta, 5 October 1960. Full translation).

Mine Shaft Drilling Equipment

The Ural Machine Builders have created new high productivity cutting machines for the mine shaft drillers. One of them is at work in the Donbass. This is the UKB-3.6 shaft boring unit. It will cut five metres per 24 hours instead of the former figure of 25 centimetres. The unit works without any personnel in the shaft, securing complete safety in operation.

Good news of another machine, built by the Ural Machine Construction Plant, are coming out of the Karaganda Basin. This is the high speed cutting unit, "PD-1M". On one of the operations the machine underwent tests under complex geological conditions. The mine shaft cutters say, "Wonderful machines." The plant is constructing new mechanisms for them. The mining machinery designers under the leadership of bureau chief P. I. Galanov and project engineer A. A. Nosovskiy are developing a working model of a unique unit for drilling shafts with a diameter of 8.75 metres and a depth of 800 metres.

Drilling Equipment (cont'd)

This unit differs from existing foreign and domestic machines by a new principle of drilling and a high degree of mechanization. The cutting will take place in two phases and not on ten phases as similar machines do, for example, in Holland. The unit is designed for working in the weakened and water infused soils of the Kursk Magnetic Anomaly. All known methods of drilling are useless in this region, since the sub-soil water floods the shaft. In the Uralmash unit, the entire shaft fills up with a clay solution. This protects the shaft against water seepage as well as cave-ins.

The drill is hung from the drill column. The rotor which runs the drill and the column is located on a platform located at ground level and not 10-12 metres above the ground as was the case in the old unit produced by the Ural Plant. This permits a light, open-work 45 metre derrick. The rotor is designed with a vertical engine on direct current. This placing of the

Drilling Equipment (cont'd)

electric motor in the rotor is used for the first time in such a machine and has turned out to be a good thing. Unreliable chain, conical, and cog transmissions have been eliminated. There are also many other unique components and mechanisms. One of them is the platform under the rotor, a talevaya system with a load capacity of 800 tons, a 25-ton conical rotating crane consisting of a powerful column with a diameter of 1,400 millimetres. Inside it is located a passenger elevator.

One person will direct the unit from a panel, and the other six will merely check on the operations of the mechanisms and take part in the lowering and hoisting operations. The drilling speed of the new unit is 90-100 metres per month, in other words, twice that of existing machinery. (Stroitel'naya Gazeta, 16 October 1960. Full translation).